Patent Claims:

1. A method for manufacturing a thermoplastic board comprising at least one smooth side edge through:

- mixing a thermoplastic synthetic in an extruder;
- pressing the synthetic through a wide-slot nozzle to a flat synthetic web (20);
- cooling and calibrating of the synthetic web (20) on a calendar roll pair; and
- drawing off the synthetic web (20);

characterized in that the side edge (21) of the synthetic web (20) is heated to at least the melting temperature following calibration, while the peripheral surface zones (22, 23) are kept at a temperature below the softening temperature by cooling.

2. A method as set forth in claim 1, characterized in that the synthetic is hard PVC.

3. A method as set forth in claim 1 or 2, characterized in that the synthetic board is an integral foam board.

4. A method as set forth in one of the claims 1 to 3, characterized in that the longitudinal sides of the

synthetic web (20) are trimmed prior to heating of the side edges.

5. A smoothing device (10; 10') for a side edge (21, 24) of a thermoplastic board (20), with a guiding groove (14; 14') with at least one heating means (15; 15') in the face area (11; 11'), each with at least one cooling means (16, 17; 16', 17') at the side areas (12, 13; 12', 13') located on opposite sides, where a synthetic board (20), which can be guided in a guiding groove (14; 14'), rests with its cutting edge (21, 24) against the face zone (11, 11') and with its peripheral surface zones (22, 23) against the side areas (12, 13; 12', 13').

6. A smoothing device (10) as set forth in claim 5, characterized in that at least one thermal insulating layer is provided between each of the heating and cooling means (15, 16, 17).

7. A smoothing device (10) as set forth in claim 6, characterized in that at least one insulation zone formed by a groove or a borehole (18.1,..., 18.5), which stretches across a major portion of the smoothing device (10), is located between a cross-sectional zone with a heating means

(15) located in it and at least one cross-sectional zone in which a cooling means (16; 17) is located.

8. A smoothing device (10') as set forth in one of the claims 5 to 7, characterized in that the heating means is formed by at least one heating channel (15') in which a heated liquid is flowing.

9. A smoothing device (10) as set forth in one of the claims 5 to 7, characterized in that the heating means is formed by at least one electrical heating cartridge (15).

10. A smoothing device (10; 10') as set forth in one of the claims 5 to 9, characterized in that the heating means (15; 15') stretches across 0.4 to 0.6 times the length of the smoothing device.

11. A smoothing device (10; 10') as set forth in one of the claims 5 to 10, characterized in that the cooling means is created by at least one cooling channel (16, 17; 16', 17'), which has a cooling liquid flowing through it.

12. A smoothing device (10; 10') as set forth in claim 10, characterized in that the cooling channels (16, 17; 16', 17') are fed by a common cooling liquid lead line.

13. A smoothing device (10; 10') as set forth in one of the claims 5 to 11, characterized in that at least one of the side areas (12, 13; 12', 13') of the guiding groove (14; 14') exhibits an inlet slant (14.1) towards the outside of the device.

14. A smoothing device (10) as set forth in one of the claims 5 to 12, characterized in that the smoothing device is supported in a spring-loaded fashion and is movable perpendicular to the face area (11).

15. An edge machining system (100) for a side edge (21, 24) of a thermoplastic board (20), comprising at least one smoothing device (10) as set forth in one of the claims 5 to 14 and a guiding device, comprising at least:

- one movable carriage for receiving at least one synthetic board (20);
- at least one securing means (35) for securing the synthetic board (20) on the carriage; and

- one drive device (32, 33, 34) for moving the carriage in relation to the smoothing device (10).

16. An edge machining system (100) for a side edge (21, 24) of a thermoplastic board (20), comprising at least one smoothing device (10) as set forth in one of the claims 5 to 14 and a guiding device, comprising at least:
- one movable carriage for receiving at least one synthetic board (20);
- at least one securing means (35') for securing the synthetic board (20) on the carriage; and
- one drive device (32', 33', 34') for moving the carriage in relation to the smoothing device (10).

17. An edge machining system (100, 100') as set forth in claim 15 or 16, characterized in that at least two smoothing devices (10) are provided, which are located symmetrical to one another with regard to the direction of movement (2).

18. An edge machining system as set forth in claim 15, characterized by a rotation device with which the synthetic board can be rotated relative to the carriage.

19. An edge machining system as set forth in claim 16 or 17, characterized by a rotation device with which the smoothing device can be rotated relative to the synthetic board.

20. An edge machining system as set forth in one of the claims 15 to 19, characterized in that the distance of the smoothing device to a symmetric axis of the synthetic board is adjustable.

METHOD FOR THE PRODUCTION OF A THERMOPLASTIC BOARD COMPRISING AT LEAST ONE SMOOTH EDGE, DEVICE THEREFORE, AND EDGE MACHINING SYSTEM

The invention relates to a method for producing a thermoplastic board (20) comprising at least one smooth side edge (21) by means of extrusion. Said side edge of the synthetic web is heated at least to the melting temperature following calibration while the peripheral surface zones are kept at a temperature below the softening temperature by cooling the same. A smoothing device (10') for a side edge of a thermoplastic board encompasses a guiding groove (14') that is provided with at least one heating means (15') located within the face (11') and at least one respective cooling means (16', 17') located within the side surfaces (12', 13') that face each other. The cutting edge (21, 24) of a synthetic board (20) that can be guided inside the guiding groove (14') rests against the face (11') while the peripheral surface zones (22, 23) thereof lean on the side surfaces (12', 13').